Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

Claims 1. - 124. (canceled)

Claim 125. (currently amended) An antenna apparatus that controls the magnitude and gradient of a radiated electric field, including an antenna comprising:

a) a voltage divider having at least two electrical contacts coupled to it; ~~and~~

b) a plurality of spaced apart, low resistance, finger elements coupled to the voltage divider at intervals between the at least two contacts, such that the electrical potential along a long axis of each element is approximately uniform and each finger element radiates at an electric potential that is a function of the potential on the voltage divider where the element is coupled,

wherein the voltage divider is a resistive divider; and

c) a processor coupled to the voltage divider, wherein the processor sends commands to a drive signal transmitter, the commands causing the transmitter to send a sequence of three drive-signal states to the voltage divider, the three states comprising:

i) zero voltage to the voltage divider,

ii) a gradient voltage to the voltage divider, and

iii) a constant voltage to the voltage divider.

Claim 126. (previously presented) The apparatus of claim 125 wherein the width of the finger elements varies along the long axis.

Claim 127. (previously presented) The apparatus of claim 125 wherein the voltage divider and the plurality of finger elements are disposed on an insulating surface.

Claim 128. (previously presented) The apparatus of claim 127 wherein the insulating surface is substantially planar.

Claim 129. (previously presented) The apparatus of claim 125 wherein the long axes of the finger elements are substantially straight and parallel.

Claim 130. (previously presented) The apparatus of claim 128 wherein the long axes of the finger elements are substantially orthogonal to the line of the voltage divider.

Claim 131. (previously presented) The apparatus of claim 125 wherein the long axes of the finger elements are curved.

Claim 132. (previously presented) The apparatus of claim 125 wherein the intervals between the finger elements are substantially uniform.

Claim 133. (previously presented) The apparatus of claim 125 wherein a difference in electrical potential between each pair of adjacent finger elements is substantially constant.

Claims 134. - 160. (canceled)

Claim 161. (currently amended) An antenna apparatus comprising:

a) a first antenna and a second antenna separated by an electrical insulator;

b) the first antenna comprising,

i) a first voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the first voltage divider between the at least two electrical contacts; ~~and~~

c) the second antenna comprising,

i) a second voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the second voltage divider between the at least two electrical contacts;

wherein the first antenna is oriented so that the finger elements of the first antenna overlay a portion of the finger elements of the second antenna; and an angle between the finger elements of the first antenna and the finger elements of the second antenna is between 0° and 180°, and

wherein the first antenna is disposed on a first side of an insulating surface and the second antenna is disposed on a second side of an insulating surface; and

d) a processor coupled to the first voltage divider and coupled to the second voltage divider, wherein the processor sends commands to a drive signal transmitter, the commands causing the transmitter to send a sequence of five states to the first and second voltage dividers independently, the five states comprising:

i) zero voltage to the first and the second voltage dividers,

ii) a gradient voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iii) a constant voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iv) a gradient voltage to the voltage divider of the second antenna and zero voltage to the first antenna, and

v) a constant voltage to the voltage divider of the second antenna and zero voltage to the first antenna.

Claim 162. (previously presented) The apparatus of claim 161 wherein the width of the finger elements varies along an element's length.

Claim 163. (canceled)

Claim 164. (previously presented) The apparatus of claim 161 wherein the first voltage divider has a linear shape.

Claim 165. (previously presented) The apparatus of claim 161 wherein the second voltage divider has a linear shape.

Claim 166. (previously presented) The apparatus of claim 164 wherein the second voltage divider has a linear shape.

Claims 167. - 169 (canceled)

Claim 170. (currently amended) An antenna apparatus comprising:

a) a first antenna and a second antenna separated by an electrical insulator;

b) the first antenna comprising,

i) a first voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the first voltage divider between the at least two electrical contacts; ~~and~~

c) the second antenna comprising,

i) a second voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the second voltage divider between the at least two electrical contacts;

wherein the first antenna is oriented so that the finger elements of the first antenna overlay a portion of the finger elements of the second antenna; and an angle between the finger elements of the first antenna and the finger elements of the second antenna is between 0° and 180°,

wherein the first voltage divider has a linear shape,

wherein the second voltage divider has a linear shape,

wherein the long axes of the finger elements are substantially straight, wherein the finger elements of the first antenna are substantially orthogonal to the line of the first voltage divider, and the first voltage divider and finger elements lie substantially in a plane,

wherein the finger elements of the second antenna are substantially orthogonal to the line of the second voltage divider, and the second voltage divider and finger elements lie substantially in a plane, and

wherein the first antenna is disposed on a first side of an insulating surface and the second antenna is disposed on a second side of an insulating surface; and

d) a processor coupled to the first voltage divider and coupled to the second voltage divider, wherein the processor sends commands to a drive signal transmitter, the commands causing the transmitter to send a sequence of five states to the first and second voltage dividers independently, the five states comprising:

i) zero voltage to the first and the second voltage dividers,

ii) a gradient voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iii) a constant voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iv) a gradient voltage to the voltage divider of the second antenna and zero voltage to the first antenna, and

v) a constant voltage to the voltage divider of the second antenna and zero voltage to the first antenna.

Claim 171. (canceled)

Claim 172. (currently amended) An antenna apparatus comprising:

a) a first antenna and a second antenna separated by an electrical insulator;

b) the first antenna comprising,

i) a first voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the first voltage divider between the at least two electrical contacts; ~~and~~

c) the second antenna comprising,

i) a second voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the second voltage divider between the at least two electrical contacts;

wherein the first antenna is oriented so that the finger elements of the first antenna overlay a portion of the finger elements of the second antenna; and an angle between the finger elements of the first antenna and the finger elements of the second antenna is between ~~0~~ 0° and 180° and wherein,

the first antenna is disposed on a first side of a first insulating surface;

the second antenna is disposed on a first side of a second insulating surface; and

the second antenna is positioned adjacent to a second side of the first insulating surface; and

d) a processor coupled to the first voltage divider and coupled to the second voltage divider, wherein the processor sends commands to a drive signal transmitter, the commands causing the transmitter to send a sequence of five states to the first and second voltage dividers independently, the five states comprising:

i) zero voltage to the first and the second voltage dividers,

ii) a gradient voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iii) a constant voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iv) a gradient voltage to the voltage divider of the second antenna and zero voltage to the first antenna, and

v) a constant voltage to the voltage divider of the second antenna and zero voltage to the first antenna.

Claim 173. (previously presented) The apparatus of claim 161 wherein the first voltage divider has a substantially linear shape and the long axes of the finger elements coupled to the first voltage divider are curved.

Claim 174. (canceled)

Claim 175. (previously presented) The apparatus of claim 161 wherein the intervals between the finger elements are substantially uniform.

Claim 176. (previously presented) The apparatus of claim 161 wherein a difference in electrical potential between each pair of adjacent finger elements is substantially constant.

Claims 177. - 196. (canceled)

Claim 197. (currently amended) An electrographic position sensing system comprising:

a) a first transmitting antenna and a second transmitting antenna separated by an electrical insulator;

the first antenna comprising,

i) a first voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the first voltage divider between the at least two electrical contacts; and

the second antenna comprising,

i) a second voltage divider having at least two electrical contacts coupled to it; and

ii) a plurality of spaced apart, electrically conductive, finger elements coupled to the second voltage divider between the at least two electrical contacts;

wherein the first antenna is oriented so that the finger elements of the first antenna overlay a portion of the finger elements of the second antenna; and the finger elements of the first antenna form a non-zero angle with the finger elements of the second antenna[[.]] ;

b) a processor coupled to the first voltage divider at two or more electrical contacts and coupled to the second voltage divider at two or more electrical contacts, wherein the processor sends commands to a drive signal transmitter, the commands causing the transmitter to send a sequence of five states to the first and second voltage dividers independently, the five states comprising:

i) zero voltage to the first and the second voltage dividers,

ii) a gradient voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iii) a constant voltage to the voltage divider of the first antenna and zero voltage to the second antenna,

iv) a gradient voltage to the voltage divider of the second antenna and zero voltage to the first antenna, and

v) a constant voltage to the voltage divider of the second antenna and zero voltage to the first antenna; and

c) a receiving antenna coupled to the processor, wherein the receiving antenna receives a signal measurement in each state.

Claim 198. (previously presented) The apparatus of claim 197 wherein the finger elements of the first antenna are substantially orthogonal to the finger elements of the second antenna.

Claim 199. (previously presented) The apparatus of claim 197 wherein the first antenna is disposed on a first side of an insulating surface and the second antenna is disposed on a second side of an insulating surface and the area defined by the finger elements of the first antenna essentially entirely overlays the area defined by the finger elements of the second antenna.

Claim 200. (previously presented) The apparatus of claim 197 wherein the first and second antennas and the insulating sheet are substantially planar.

Claim 201. - 210. (canceled)

Claim 211. (previously presented) The apparatus of claim 197 further comprising additional electrical contacts on the voltage divider, the additional contacts for coupling to a voltage device capable of pinning the voltage at each additional contact to a predetermined value.

Claims 212. - 256. (canceled)

Claim 257. (new) The apparatus of claim 197 wherein the first and second voltage dividers each comprise a resistive strip.

Claim 258. (new) The apparatus of claim 257, wherein the resistive strip comprises holes configured to compensate for variation in resistivity.

Claim 259. (new) The apparatus of claim 197, wherein the first and second voltage dividers each have at least three electrical contacts.